REMARKS

In the Office Action dated January 9, 2002, the Examiner objected to the disclosure and objected to claims 1, 4 and 17. The Examiner rejected claims 1-19 under 35 U.S.C. § 112, second paragraph, and rejected claims 1-3, 5, 6, 11, 12 and 19 under 35 U.S.C. § 103(a). The Examiner indicated that claims 4, 7-10 and 13-18 are allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph, and to include all of the limitations of the base claim and any intervening claims. With this Amendment, claims 1, 2, 4, 5, 7, 11, 12, 16, 17 and 19 have been amended, claim 20 has been added, and no claims have been canceled. After this entry of this Amendment, claims 1-20 are pending in the application. It is respectfully submitted that for the reasons set forth hereinafter the Applicant's invention as defined by the claims is not anticipated or rendered obvious by the cited prior art either individually or in the combinations posed by the Examiner.

The Examiner objects to the disclosure based on certain typographical errors. These typographical errors, and others discovered during a review of the disclosure, have been corrected. It is respectfully submitted that these changes add no new subject matter to the application. In addition, the Examiner objects to the use of gear box to describe element 2 and element 33. The Applicant has adopted the Examiner's suggestion to replace "gear box 2" with "motor housing 2" to differentiate the housing 2 from the gear box 33. The Examiner also objects to claims 1, 4, and 17. The Examiner's suggestions for claims 1 and 4 have been adopted. In claim 17, the Examiner indicates that the changes made to the claim are not clear. Claim 17 has been revised to clarify that the tube motor includes two symmetrically arranged cogwheels, each of which has a second reducing stage and drives a ring gear. It is respectfully submitted that the objections to claims 1, 4 and 17 have been overcome.

The Examiner rejects claims 1-19 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant regards as the invention. In claim 1, the Examiner expresses confusion over the use of the phrase "gear box" to designate two separate elements. The Applicant has adopted the Examiner's recommendation that claim 1 be rewritten to clarify the distinction between the gear box and the motor housing by stating that the electric motor drive and drive shaft are located in

motor housing, while the gear box supports the reducing gear and the driven shaft. In addition, the Examiner states that it is not clear how the "drive shaft and the gear input shaft work together." The Applicant has removed the description that the drive shaft and the gear input shaft work together with the wrap-spring brake, as this description is not needed in the claim. The Examiner states that it is also unclear how "a moment of torsion" is "introduced by the drive shaft." The drive shaft has been replaced with the driven shaft in claim 1. As described in the preamble of claim 1 and at page 9, lines 4-13 of the specification, the moment of torsion introduced by the driven shaft results from rotation of the driven shaft against the direction of the electric motor drive, especially when the electric motor drive is disengaged.

The Examiner also rejects claim 19 under 35 U.S.C. § 112, second paragraph because the Examiner states that there is insufficient antecedent basis for "the individual components." Claim 19 has been clarified to explicitly list the individual components of the tube motor in claim 1 by stating that the electric motor drive, the drive shaft, the motor housing, the reducing gear, the driven shaft, the wrap-spring brake and the gear box can be locked together for the installation of the tube motor.

It is respectfully submitted the foregoing changes address and overcome the Examiner's rejections pursuant to 35 U.S.C. § 112, second paragraph.

The Applicant gratefully acknowledges the indication of allowable subject matter in claim 4, 7-10 and 13-18. Claim 4 has been rewritten to independent form to include the features of claim 1 with the changes noted above except that the phrase in the preamble that specifies rotary securing of the driven shaft especially when the electric motor drive is disengaged has been added to the body of the claim to state that an annular element is positioned between the wrap spring and the gear box, which diverts into the gear box a moment of torsion introduced by the driven shaft especially when the electric motor drive is disengaged. It is respectfully submitted that claim 4 contains the subject matter indicated as allowable by the Examiner and that this change merely clarifies claim 4.

Claim 7 has been rewritten to independent form to include the features of claims 1 and 5 with the same modifications described with respect to claim 4. It is respectfully submitted that claim 7 also contains the subject matter indicated as allowable by the Examiner with respect

to the claim and that this change merely clarifies claim 7. In addition, in claim 16 a translation error has been corrected by replacing the word "drives" with the word "driving." It is further submitted that claims 8-10 and 13-18, which depend directly and indirectly from claim 7, remain similarly allowable.

The Examiner rejects claims 1, 3, 5, 11 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Wussow et al. (6,080,075) in view of Ciolli (5,399,129). The Examiner states that Wussow et al. teaches all of the features of claim 1 except for the feature of the annular element mounted free of torsion in the gear box and positioned between the wrap spring and the gear box, the annular element diverting into the gear box a moment of torsion introduced by the driven shaft. The Examiner states further that Ciolli shows such an annular element 94, and it would have been obvious at the time the invention was made to a person having ordinary skill in the art to include this feature for Ciolli's purpose of varying the speed reduction ratio. Initially, it is pointed out that Ciolli's wrap spring downshift mechanism is intended for dual speed/dual torque drive mechanisms, which Wussow et al. is not. Wussow et al.'s actuator for a speed control device does not vary the speed reduction ratio and does not suggest a need to vary the speed reduction ratio by including a downshift mechanism. Thus, the motivation cited by the Examiner does not exist in the art.

Further, Ciolli does not teach the feature of an annular element mounted free of torsion in the gear box and positioned between the wrap spring and the gear box, the annular element diverting into the gear box a moment of torsion introduced by the driven shaft. The annular element 94 referred to by the Examiner is a gear collar, which has a spring engaging ear or lug 92 with which to hold wrap spring 90 on one end. (Ciolli, col. 4, ll. 55-58). Thus, the gear collar 94 is not positioned between the wrap spring 90 and the housing 12. (Id., Fig. 2). Because neither Ciolli nor Wussow et al. teaches each feature of claim 1, the combination cannot, even if such a combination were appropriate.

Assuming, *arguendo*, that the references were combined, the combination would fail to suggest the inclusion of an annular element as described by the Applicant because such a feature would destroy the teachings of Wussow et al. Wussow et al. provides a control collar 98, disposed radially outwardly of the shaft 36 and the spring 100, which is rotatable relative to the

shaft 36. The wrap spring 100 securely engages shaft hub 88 and input hub 96 upon the frictional engagement of sleeve 92 and collar 98. The position of the wrap spring 100 relative to the coil housing 102 and its engagement to shaft sleeve 92 is necessary to enable transmission of a relatively high level of torque to the cable assembly 12 despite a low power input to coil 104. (Wussow et al., col. 5, line 57 to col. 6, line 13). The inclusion of an annular element mounted free of torsion positioned between the spring 100, the coil housing 102 and housing 42 would interfere with this relationship between collar 98, the sleeve 92 and the coil 104, preventing this transfer of torque. For the foregoing reasons, claim 1 and its dependent claims 3, 5, 11 and 19 are not rendered obvious by the cited combination.

In claim 5, a minor typographical error has been corrected to replace a gear input shaft with the gear input shaft. It is submitted that this change merely clarifies to which gear input shaft claim 5 refers and that, for the reasons set forth with respect to claim 1, claim 5 is not taught or suggested by the prior art of record.

With respect to claim 11, the Examiner states that Ciolli shows the feature of claim 11 of the sun wheel having a core. To more distinctly claim the features of claim 11, claim 11 now states that the core and the sun wheel comprise different materials. It is respectfully submitted that, even if Ciolli taught or suggested that the sun wheel has a core, which it does not, it fails to teach or suggest that the core and the sunwheel comprise different materials. Ciolli teaches that adjacent to the terminal portion of the pinion shaft 40 are sun gear teeth 44, which function as the drive to a planetary gear assembly 46. (Id., col. 4, ll. 14-17). The sun gear teeth 44 are an integral part of the pinion shaft 40. (Id., col. 4, ll. 33-34 and Figs. 2 and 3). Thus, in addition to the reasons set forth with respect to claim 1 from which claim 11 depends, claim 11 is not rendered obvious by the cited combination because the combination fails to teach or suggest the additional features of claim 11.

The Examiner rejects claims 2 and 6 under 35 U.S.C. 103(a) as being unpatentable over Wussow et al. in view of Ciolli as respectively applied to claims 1 and 5, and further in view of Kusumoto et al. (5,675,204). The Examiner states that Wussow et al. as modified by Ciolli includes all of the features of claims 1 and 2 and 6, including the feature of claim 2 of a jacket surface of the annular element facing toward the inner side of the gear box having an inner

toothing. The Examiner states that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to add inner toothing to an inner side of the gear box as taught by Kusumoto et al. for the purpose of providing torque transmission. The Applicant respectfully traverses this rejection.

First, it is respectfully submitted that one of skill in the art related to the Applicant's invention would not look to the teachings of Kusumoto et al., which involves a permanent magnet dynamo-electric machine, unrelated in structure and operation to tubular motors with their wrap-spring brakes. However, even if one looked to Kusumoto et al., any purported combination would fail to teach the features of claims 2 and 6. As previously discussed, the combination of Wussow et al. and Ciolli fails to teach or suggest an annular element mounted free of torsion in the gear box and positioned between the wrap spring and the gear box, the annular element diverting into the gear box a moment of torsion introduced by the driven shaft, which is taught by the Applicant in claim 1, from which claims 2 and 6 depend. The addition of Kusumoto et al. to this combination does not teach or suggest this feature as Kusumoto et al. does not include a wrap-spring brake, or any type of spring and does not teach or suggest such an annular element. Thus, claims 2 and 6, for the reasons set forth with respect to claim 1 from which they respectively depend, are not rendered obvious by the combination of Wussow et al., Ciolli and Kusumoto et al., even if such a combination were appropriate.

In addition to the failure of the cited combination to teach the features of claim 1, from which claim 2 depends, the combination also fails to teach the feature of claim 2 that inner side of the gear box has an inner toothing and a jacket surface of the annular element facing toward the inner side of the gear box has a corresponding inner toothing. The Examiner states that Ciolli teaches a jacket surface of the annular element 94 facing toward the inner side of the gear box 12 having an inner toothing. The Examiner proposes adding the internal tooth gear 20b of the yoke 20a taught by Kusumoto et al. to the gear box 28 of Wussow et al. as modified by Ciolli. It is respectfully submitted that these references cannot be combined in the manner suggested by the Examiner. In Kusumoto et al., the internal tooth gear 20b correspond to the teeth of a planetary gear 7 for the purpose of allowing the rotation of the gear 7 along the gear 20b. (Kusumoto et al., col. 4, ll. 39-42 and Fig. 1). Thus, even if one looked to combine this

teaching of Kusumoto et al. with Wussow et al. and Ciolli, it would teach only that the internal gear 70 surrounding the planetary gear 78 of Wussow et al. may be replaceable with a tooth gear integral with the housing 42, and that the ring assembly 70 surrounding the planetary gear 62 of Ciolli may be replaceable with a tooth gear integral with the housing 12.

If one ignores the teachings of Kusumoto et al.'s location of and purpose for the internal tooth gear 20b, and instead merely incorporates the idea of placing inner toothing somewhere on the housing of a motor, which is not taught or suggested in any of the art and is thus respectfully submitted to be improper, it still would not teach the feature of claim 2 that inner side of the gear box has an inner toothing and a jacket surface of the annular element facing toward the inner side of the gear box has a corresponding inner toothing. Adding a tooth gear to the inner side of the housing 12 of Ciolli would not correspond to inner toothing on the gear collar 94 as the housing 12 and gear collar 94 are separated by a lug 112, a spring drum 106 and empty space. (Ciolli, Fig. 2). Second, even if toothing were added to the inner side of the housing 28 of Wussow et al., it is impossible for it to correspond to toothing of the annular element, as these elements are separated by either the coil housing 102 and the control collar 98 or the coil 104 and the coil housing 102, depending upon where the Examiner places the gear collar 94 of Ciolli in the combination of Wussow et al., Ciolli and Kusumoto et al. Thus, the placement of the inner toothing as taught by the Applicant in claim 2 is not rendered obvious by the combination cited by the Examiner.

The Examiner rejects claim 12, stating that the motor of Wussow et al. modified by Ciolli includes all of the features of the claimed invention except for the core having one of a hexagonal cross section and a Torx cross section. The Examiner states that it would have been obvious at the time the invention was made to one having ordinary skill in the art to make the core with these features as taught by Ozaki for the purpose of supporting the rotor. Claim 12 has been amended to depend from claim 5 and to include the features of claim 11, from which it previously depended. Thus, the scope of claim 12 remains unchanged in this response. The Examiner's rejection is respectfully traversed. It is respectfully submitted that the Examiner is ignoring the plain meaning of the word "core." It is submitted that the drive gear 4 of Ozaki is not a core. In Fig. 6B of Ozaki, the drive gear 4 is molded as an integral single piece with the outer covering 3 and the

motor shaft 2'. It is not a core to anything as, by definition, a core must be central to an enveloping part. Thus, claim 12 is not rendered obvious by the cited combination because, in addition to the failure of the combination to teach or suggest all of the features of claim 1, from which it indirectly depends, the combination fails to teach or suggest the further features taught by the Applicant in claim 12.

With this Amendment, the Applicant has added new independent claim 20. Claim 20 describes an improvement to a tube motor comprising a wrap-spring brake, where the brake includes a wrap-spring and an annular element fixedly mounted in the gear box and surrounding the wrap-spring, the annular element absorbing a moment of torsion resulting from the effort of the driven shaft to rotate opposite a direction of rotation of the electric motor drive. It is submitted that none of the prior art of record teaches or suggests such combination of features.

It is respectfully submitted that this Amendment traverses and overcomes all of the Examiner's objections and rejections to the application as originally filed. It is further submitted that this Amendment has antecedent basis in the application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the application. Reconsideration of the application as amended is requested. It is respectfully submitted that this Amendment places the application in suitable condition for allowance; notice of which is requested.

If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the Applicant's attorney at the telephone number listed below.

Respectfully submitted,
YOUNG, BASILE, HANLON, MacFARLANE, WOOD & HELMHOLDT, P.C.

William M. Hanlon, Jr.
Attorney for Applicant
Registration No. 28422
(248) 649-3333

3001 West Big Beaver Rd., Suite 624
Troy, Michigan 48084-3107

Dated: April 8, 2002
WMH/MLK/jas

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the specification:

Replace the paragraph at page 2, lines 3-10 with the following paragraph:

In order to be able to resist these radial forces, the gear housing must have a commensurate wall thickness or be made of a material capable of compensating for the forces, such as metal. This results in the disadvantage that the gear housing cannot be dimensionally conceived as small as desired or that[;], due to the material used, is unnecessarily heavy. Accordingly, the objective of the present invention is to specify a tube motor with a reducing gear, which on the one hand can be installed in a simple manner and, on the other hand, can be designed so as to be very space-saving.

Replace the paragraph at page 5, lines 5-8 with the following paragraph:

In an especially advantageous embodiment form of the toothed wheel-work, two symmetrically arranged cogwheels are present, each of which has a second reducing stage and [.] drives a common ring gear. With such a symmetrical configuration, undesirable forces are especially well compensated.

Replace the paragraph at page 5, lines 13-18 with the following paragraph:

Furthermore, provision can be advantageously made according to the invention for the individual components of the tube motor to be locked together for the final assembly of the tube motor. Then the assembly of the tube motor can be accomplished without special tools, which is also favorable in the event of [a] disassembly of the tube motor. This works against the individual components of the tube motor simply falling out.

Replace the paragraph at page 5, lines 21-24 with the following paragraph:

Additional advantageous embodiments and details of the invention are set forth in the following description, [in] which is described in greater detail and explained with references to the embodiment examples illustrated in the appended drawings in which:

Replace the paragraphs beginning at page 6, line 7 and ending at page 7, line 1 with the following paragraphs:

Figure 1 shows a tube motor 1 with an electric motor drive 3 in a [gear box] motor housing 2. This drive 3 has brushes 4 in contact with a collector 7. Also clearly shown is a drive shaft 8 on which a rotor 9 is mounted. Present on the free end of the drive shaft 8 is a pinion 12 with oblique toothing. Driven by the pinion 12 are two symmetrically arranged cogwheels 13, which run axially to the drive shaft 8. Only one cogwheel 13 can be seen in Figure 1, since the sectioning line is in the area of the second cogwheel in which the second cogwheel does not lie.

The cogwheels 13 are rotationally mounted on the cogwheel axes 14. The cogwheel axes 14 are[.] in turn mounted on a gear retainer 17 located on the open face of the [gear box] motor housing 2 facing toward pinion 12. The gear retainer 17 then forms the frontal part of the [gear box] motor housing 2 and is nondetachably joined to the [gear box] motor housing 2. Each of the cogwheels 13 has two reducing stages, namely one reducing stage 18 that meshes with the pinion 12 and a second reducing stage 19, which is designed as an interior pinion and drives a ring gear 22. The toothed wheel-work located behind the drive shaft 8 of the drive 3 is covered by a tube-like cover part 23 and screwed together with the gear retainer 17 by means of a fastening screw 24. The ring gear 22 thus driven then works together with a wrap-spring brake 27 and with a sun wheel 28 of a reducing gear, namely a planetary gear drive 29 with a driven shaft 30, in such a way that driven shaft 30 is secured against rotation by means of the wrap-spring brake 27 when the drive 3 is disengaged. Figure 2 depicts the reducing gear, namely the planetary gear [21] drive 29, in an enlarged view. Clearly shown are the ring gear 22 and the sun wheel 28 working together with the ring gear 22. Located between the ring gear 22 and the sun wheel 28 is the wrap-spring brake 27. The wrap-spring brake 27 has a wrap spring 32 and an annular element 34 located between a gear box 33 and the wrap spring 32 mounted on the gear box 33 so as to be free of torsion.

Replace the paragraph at page 7, lines 8-15 with the following paragraph:

The peripheral area of the annular element [33] 34 has two recesses 37 that are provided for receiving locking hooks and should make possible a locking of the annular element

34 on the gear box 33. In Figure 4 as well, which depicts a cut along the line A/A in Figure 3, a recess 37 is clearly evident. Due to the tension-release tendency of the wrap spring 32, the wrap spring 32 presses radially against the inside of the annular element 34. Then a turning of the wrap spring 32 in relation to the annular element 34 is possible only when the wrap spring 32 is turned against its tension-release tendency.

Replace the paragraphs beginning at page 8, line 25 and ending at page 9, line 10 with the following paragraphs:

As shown in Figure 2, the sun wheel 28 drives three planets 58, although only one planet is depicted in the section according to Figure 2. The planets 58 roll of on an inner toothing 59, which is present on the inner side of the gear box 33. This inner toothing 59 extends from the side of the gear box 33 facing toward the ring gear 22 to a shoulder 62, which axially bears the driven shaft [33] 30. The outer toothing of the annular element 34 matches the inner toothing 59, so that the annular element 34 can be inserted for installation in the toothing 59.

For the assembly of the planetary gear drive 29 shown in Figure 2 and the cover part 23, the gear box 33 has a locking hook 63, which can engage in the locking indentations [(64)] 64 on the cover part 23, which are shown in Figure 1. When the drive 3 is disengaged, a moment of torsion introduced via the driven shaft [3] 30 is transferred by the planetary gear drive 29 to the sun wheel 28. As a result of the working together of the coupling section 47 of the sun wheel 28 and the wrap spring 32 located in the annular element 34, the wrap spring 32 is expanded and the positive closure between the wrap spring 32 and the annular element 34 is intensified. The radially applied forces are then absorbed by the annular element 34.

In the claims:

1. (Twice amended) A tube motor with an electric motor drive with a drive shaft located in a [gear box] motor housing, [with] a reducing gear with a driven shaft coupled with the drive shaft via a gear input shaft, a gear box supporting the reducing gear and the driven shaft and, for rotary securing of the driven shaft especially when the electric motor drive is disengaged, [with] a wrap-spring brake working against the gear box[, while the drive shaft and

the gear input shaft work together with the wrap-spring brake], characterized in that, mounted free of torsion on the gear box and positioned between the wrap spring and the gear box is an annular element, which diverts into the gear box a moment of torsion introduced by the [drive]driven shaft.

2. (Twice amended) [A Tube] The tube motor according to Claim 1, characterized in that inner side of the gear box has an inner toothing and a jacket surface of the annular element facing toward the inner side of the gear box has a corresponding inner toothing.

4. (Three times amended) [The tube motor according to Claim 1] A tube motor with an electric motor drive with a drive shaft located in a motor housing, a reducing gear with a driven shaft coupled with the drive shaft via a gear input shaft, a gear box supporting the reducing gear and the driven shaft and wrap-spring brake working against the gear box, characterized in that, positioned between the wrap spring and the gear box is an annular element, which diverts into the gear box a moment of torsion introduced by the driven shaft especially when the electric motor drive is disengaged and the annular element has one of locking hooks and locking indentations on its periphery which can be engaged together with one of locking indentations and locking hooks respectively located on the inner side of the gear box.

5. (Three times amended) The tube motor according to Claim 1, characterized in that the reducing gear has a planetary gear drive, while the planetary gear drive has a sun wheel as [a]the gear input shaft.

7. (Twice amended) [The tube motor according to Claim 5,] A tube motor with an electric motor drive with a drive shaft located in a motor housing, a reducing gear with a driven shaft coupled with the drive shaft via a gear input shaft, a gear box supporting the reducing gear and the driven shaft and a wrap-spring brake working against the gear box, characterized in that, positioned between the wrap spring and the gear box is an annular element, which diverts into the gear box a moment of torsion introduced by the driven shaft especially

when the electric motor drive is disengaged and wherein the reducing gear has a planetary gear drive, while the planetary gear drive has a sun wheel as the gear input shaft and the side of the sun wheel facing toward the wrap spring has a plurality of circular lands curved in cross section, around which the wrap spring is positioned.

11. (Three times amended) The tube motor according to Claim 5, characterized in that the sun wheel has a core, the core and the sun wheel comprising different materials.

12. (Twice amended) The tube motor according to Claim [11]5, characterized in that the sun wheel has a core and the core has one of a hexagonal cross section and a Torx cross section.

16. (Twice Amended) The tube motor according to Claim 14, characterized in that at least one cogwheel has a second reducing stage designed as a pinion [drives] driving a ring gear.

17. (Three times amended) The tube motor according to Claim 14, [characterized] including two symmetrically arranged cogwheels, each of which has a second reducing stage and drives a ring gear.

19. (Three times amended) The tube motor according to Claim 1, characterized in that the [individual components of the tube motor] electric motor drive, the drive shaft, the motor housing, the reducing gear, the driven shaft, the wrap-spring brake and the gear box can be locked together for the installation of the tube motor.

Claim 20 has been added.